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# *Your future is not forgotten*

## ★ A MESSAGE TO MEN IN COLLEGE

There will be a future.

The very service you are being called upon to render to your country is assurance of that. We know the stuff you're made of, because we have watched two generations of college men join our ranks and grow with us.

And the materiel which we older men in industry are pouring out makes assurance doubly sure.

What kind of future will you have?

By chapter and verse, no one can recite *exactly*. But a lot of folks like us mean to see that Opportunity is going to be greater than any generation of young men has ever known.

Every hour of thinking time we can catch on the fly is devoted to that one aim. Here at

Alcoa we call it Imagineering. We are letting our imagination soar, and ballasting it with engineering experience. Our purpose is to make aluminum make jobs where none ever existed before.

The exciting new uses we glimpse for Alcoa Aluminum are our part of the groundwork of the structure of peace you will come back to help to build.

Your chance is going to be the creative chance. The materials, the tools, the techniques, will be ready and waiting. Your imagination, your ingenuity, your courage to do, cannot, must not, fail to have their turn.

As man to man we say it, soberly: Your future is not forgotten.

*A PARENTHETICAL ASIDE: FROM THE AUTOBIOGRAPHY OF*



# ALCOA ALUMINUM

• This message is printed by Aluminum Company of America to help people to understand *what we do* and *what sort of men* make aluminum grow in usefulness.



## "METALLIC VITAMINS" FOR INDUSTRY

So effective are relatively minute quantities of cemented carbides in stepping up—pepping up—production that they are often called the “metallic vitamins” of industry.

Because only small quantities are required per tool, Carboloy cemented carbides are measured in grams. A gram is 1/453rd part of a pound. A Carboloy tool tip weighing only 25 grams or slightly less than one ounce is a good size tip—enough to last for days, weeks—often months of cutting at speeds often higher than 4 to 5 times that possible with ordinary steel tools.

In terms of production, an ounce of cemented carbide can turn the turrets of dozens of tanks, or drill hundreds of guns, or turn as many as several hundred shell, or bore the cylinders of hundreds of “Jeep” cars. One ounce of carbide can do these and countless other crucial machining jobs faster and better than any other tool material.

These “metallic vitamins” also serve the cause of victory in many other ways. In masonry drills, they drill holes in concrete 75% faster for installing war production machinery. . . . In dies they speed up production of wire, cartridge cases, bullets, etc. . . . As wear-resistant inserts on vital machine parts, they

keep machines running. As a matrix material, they conserve diamonds, shorten operating time on mine drilling, dressing of grinding wheels, etc.

The myriad of present uses for Carboloy—the “metallic vitamin” of industry—now helping to speed the day of victory, forecast the steadily increasing diversity of benefits for the years of peace to come. ★ ★ Carboloy Company, Inc., Detroit, Mich. District Offices: Birmingham, Ala. • Chicago • Cleveland • Los Angeles • Newark • Philadelphia • Pittsburgh • Seattle.

### CARBOLOY TRAINING FILMS

*A series of six Carboloy Training Films now available covering detailed, step-by-step procedure on the design, brazing, grinding, use and manufacture of cemented carbide tools, 35 mm silent slide films. (Not motion pictures.) Available for permanent use at approximate print cost of \$20 per set. Educational institutions may also secure sets on loan for single showings through selected college film loan libraries. Catalog and loan library listing on request. Write Carboloy Company Inc., Detroit, for Booklet “A”.*

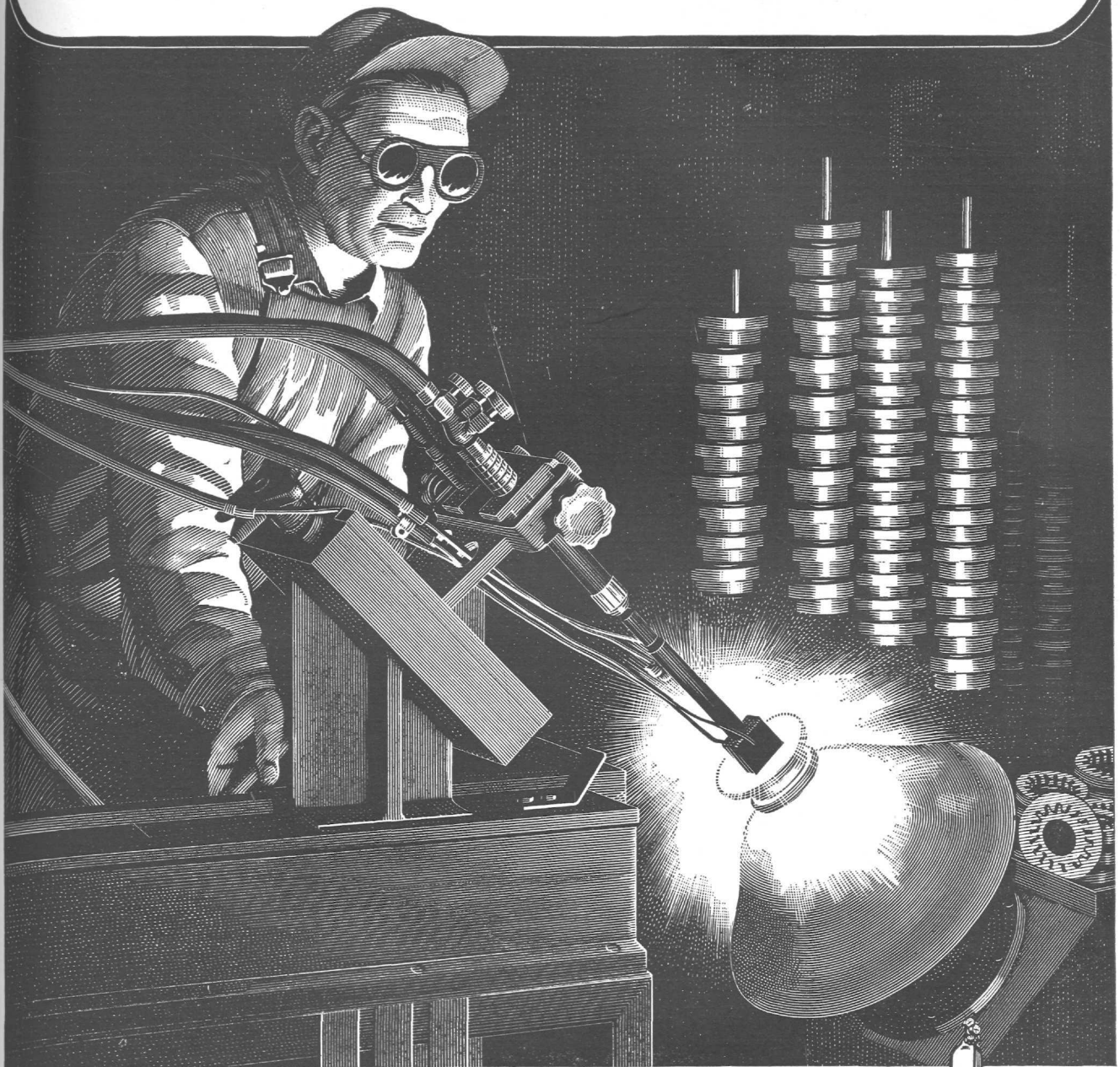
# CARBOLOY

TRADEMARK



**CEMENTED CARBIDE**  
TOOLS • DIES • DRESSERS  
MASONRY DRILLS • WEAR PARTS

## GEAR TEETH HARDENED IN 8 SECONDS



Not only a few seconds the oxyacetylene flame adds greatly to the service life of this internal gear. Teeth and other surfaces subject to wear are rapidly hardened by the modern oxyacetylene flame treating process. The depth of hardening is easily and accurately controlled, without affecting the inherent toughness of the core metal.

Airco Flame Hardening gives all the advantages of other surface hardening methods plus speed and ease of application. Simple arrangements using one or more torches permit flame hardening of a large variety of metal parts on a production basis.

Many other applications of the oxyacetylene flame are finding ever widening application in speeding and improving production of ships, tanks, guns, rolling stock and planes. This versatile tool slices through steel with remarkable speed—welds metal into strong, light units—sweeps surface rust from metal structures to extend the life of paint jobs—gouges steel and iron quickly and accurately.

To better acquaint you with the many things that this modern production tool does better we have published "Airco in the News", a pictorial review in book form. Write for a copy.



# AIR REDUCTION

*General Offices:*

60 EAST 42nd STREET, NEW YORK, N. Y.

*In Texas:*

Magnolia-Airco Gas Products Co.  
General Offices: HOUSTON, TEXAS  
OFFICES IN ALL PRINCIPAL CITIES

ANYTHING AND EVERYTHING FOR GAS WELDING OR CUTTING AND ARC WELDING

February, 1943

Page 27

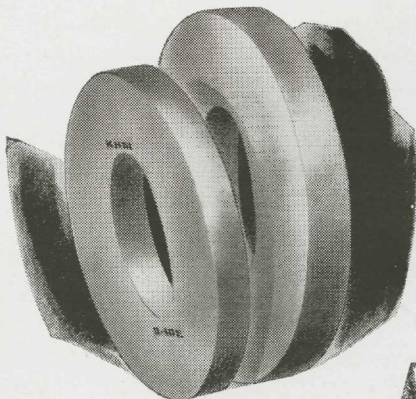


Now they fly ten times as long  
without overhauling!



The flimsy crates of World War 1 needed overhauling after as little as 24 flying hours. But today's planes fly hundreds of hours at much higher speeds before a major overhaul. The reason? New materials, new designs and new methods of finishing metal surfaces. Finishes so nearly perfect that bearings, cylinders, pistons and cams are made practically wear-proof! It's a process in which Carborundum has played an important part...by supplying the finishing wheels and stones required.

Formerly ultra-finishing was a long tedious task. But thanks to the new process, finishes accurate to a few millionths of an inch can now be produced on ground surfaces on a production basis. Application of these finishes to wartime engine production has improved the fighting efficiency not only of planes, but of tanks and other motorized equipment. Fewer men are needed for maintenance and repair.



Ultra-finishing—is only one of many ways in which Carborundum may be able to help save precious time. When you get out in the field and encounter a production problem that abrasives might solve, write The Carborundum Company, Niagara Falls, New York.

**CARBORUNDUM**  
REG. U.S. BRAND PAT. OFF.  
ABRASIVE PRODUCTS



Carborundum is a registered trade-mark of and indicates manufacture by The Carborundum Company.



# G-E *Campus News*



## MERRY-GO-WHEEL

A DEVICE that rotates in the manner of a combination merry-go-round and Ferris wheel has been developed to speed the drilling of marine gear casings at one of General Electric's major plants.

Known as a universal indexing trunnion fixture, the device permits quick moving of the casings for drilling at any angle in a full circle and on any plane. Movement is controlled by a push-button.

About 110 holes must be drilled and tapped in each of the casings. Formerly it took a crane to move the casings (which vary in weight from 1000 to 2000 lb) after each surface was drilled, and every piece of work had to be set up at least six times.

Now work is set up just once—on a table that can be turned completely around in either direction with no more effort than it takes to push a revolving door—and 24 to 32 hours a week are saved.



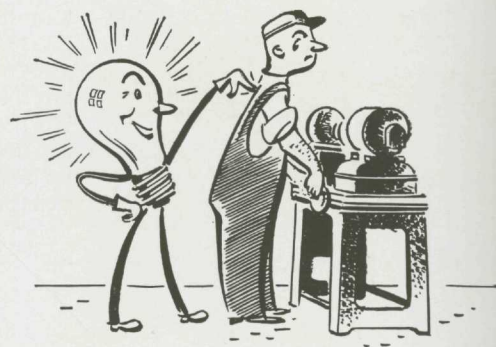
## THE BETTER TO SEE WITH

PARTICLES as small as one millionth of an inch—one thousandth of the diameter of a human hair—can be clearly seen with the new G-E electron microscope.

Developed by Drs. C. H. Bachman (Iowa State, '32) and Simon Ramo (U. of Utah, '33), the new instrument can magnify a specimen as much as 10,000 times and reveal the actual composition and structure of such minute things as dust and smoke particles.

Here's how it works: a beam of electrons inside a vacuum chamber passes through the specimen, passes through an "electron lens," and produces a magnified picture on a fluorescent view screen. This image can then be photographed outside the tube and enlarged up to 100,000 times the size of the original specimen.

The microscope, designed for use in small laboratories and war plants, is portable and operates on ordinary house current.



## THE LIGHT FANTASTIC

ACTUALLY it's just an ordinary light bulb, but used in an indicating method developed by a G-E foreman, it helps minimize errors in precision lathe work requiring an accuracy of five one hundred thousandths of an inch.

This new method eliminates the human element inherent in the old practice of using a magnifying glass to see when the tool makes contact with the surface to be cut.

In this indicating method, electrical contact between tool and work is used to close a light circuit. The tool is brought up to the surface to be cut in the regular manner until it is just about to make contact. From this point on it is brought up very slowly until the pilot light flickers.

When the light is steady, the indicator is set at zero; and if it is set and read correctly, there can be no error.

If you'd like to try this on your own machine-shop equipment, write for a free diagram and description to Campus News, General Electric Co., Schenectady, N. Y.

# GENERAL ELECTRIC